

CLAIMS

1. A composition comprising material encapsulated within shell capsules, each capsule comprising an encapsulating wall having an inner surface and an outer surface, with a coating on the inner surface and/or outer surface of the shell wall; and surfactant and/or solvent.
2. A composition according to claim 1, wherein the composition is a product, particularly a consumer product.
3. A composition according to claim 2, wherein the product is a water-based product.
4. A composition according to any one of the preceding claims, wherein the encapsulated material comprises a first material which is at least partially, preferably substantially and more preferably completely soluble, in the surfactant and/or solvent of the composition.
5. A composition according to claim 4, wherein the first material is a perfume.
6. A composition according to claim 4, wherein the first material is a dental flavour.
7. A composition according to claim 4, wherein the first material is an agrichemical.
8. A composition according to claim 4, wherein the first material is a cosmetic ingredient.
9. A composition according to claim 4, wherein the first material is an insect repellent.

10. A composition according to claim 4, wherein the first material is an antimicrobial agent or a deodorant active.
11. A composition according to claim 5, wherein the perfume is in the form of a perfume composition, which comprises at least 80% and preferably at least 90% by weight of the total weight of the perfume composition of perfume materials having an octanol-water partition coefficient of greater than 2.5 (in logarithmic form to base 10).
12. A composition according to claim 11, wherein less than 35%, and preferably less than 20%, by weight of the total weight of the perfume composition comprises perfume materials having an octanol-water partition coefficient of greater than 5 (in logarithmic form to base 10).
13. A composition according to any one of the preceding claims, wherein the shell capsules are prepared by coacervation, interfacial polymerisation or polycondensation.
14. A composition according to claim 13, wherein the shell capsules are aminoplast capsules.
15. A composition according to claim 14, wherein the shell capsules are aminoplast capsules, based on melamine, singly or in combination with other suitable amines, crosslinking agents and secondary polymers.
16. A composition according to claim 14, wherein the aminoplast capsules comprise a mixed resin of urea/formaldehyde, maleic anhydride copolymer(s) and melamine/formaldehyde polymers.
17. A composition according to any one of the preceding claims, wherein the shell capsules have a diameter in the range 1 to 500 microns, preferably 1 to 300 microns, more preferably 1 to 50 microns, most preferably 1 to 10 microns.

18. A composition according to any one of the preceding claims, wherein the inner surface of the shell wall is coated with a film-forming polymer.

19. A composition according to claim 18, wherein the polymer is selected from: poly(ethylene-maleic anhydride), polyamine, waxes e.g. carbowax, polyvinylpyrrolidone (PVP) and its co-polymers such as polyvinylpyrrolidone-ethyl acrylate (PVP-EA), polyvinylpyrrolidone-vinyl acrylate, polyvinylpyrrolidone methylacrylate (PVP-MA), polyvinylpyrrolidone/vinyl acetate, polyvinyl acetal, polyvinyl butyral, polysiloxane, poly(propylene/maleic anhydride), maleic anhydride derivatives and co-polymers of the above, e.g. polyvinyl methyl ether/maleic anhydride.

20. A composition according to claim 19, wherein the polymer is selected from: polyvinylpyrrolidone (PVP) and its co-polymers such as polyvinylpyrrolidone-ethyl acrylate (PVP-EA), polyvinylpyrrolidone-vinyl acrylate, polyvinylpyrrolidone methylacrylate (PVP-MA) and polyvinylpyrrolidone/vinyl acetate.

21. A composition according to any one of the preceding claims, wherein the outer surface of the shell wall is coated with a high molecular weight, film-forming polymer, which may optionally be crosslinked.

22. A composition according to claim 21, wherein the polymer is water-soluble.

23. A composition according to claim 21 or 22, wherein the polymer is selected from: polyvinyl alcohol, styrene-butadiene latex, gelatin, gum arabic, carboxymethyl cellulose, carboxymethyl hydroxyethyl cellulose, hydroxyethyl cellulose, other modified celluloses, sodium alginate, chitosan, casein, pectin, modified starch, polyvinyl acetal, polyvinyl butyral, polyvinyl methyl ether/maleic anhydride, polyvinyl pyrrolidone (PVP) and its co-polymers (e.g. polyvinylpyrrolidone/vinyl acetate (PVP/VA) poly(vinyl pyrrolidone/dimethaminoethyl methacrylate) (PVP/DMAEMA), poly(vinyl pyrrolidone/methacrylamidopropyl trimethyl ammonium chloride), melamine-formaldehyde and urea-formaldehyde.

24. A composition according to claim 23, wherein the polymer is selected from: polyvinyl alcohol, polyvinyl pyrrolidone (PVP) and its co-polymers (e.g. polyvinylpyrrolidone/vinyl acetate (PVP/VA) poly(vinyl pyrrolidone/dimethylaminoethyl methacrylate) (PVP/DMAEMA), poly(vinyl pyrrolidone/methacrylamidopropyl trimethyl ammonium chloride).

25. A composition according to any one of the preceding claims, wherein the coated shell capsules have a wall thickness in the range 0.01 to 30 microns, preferably 0.01 to 5 microns, more preferably 0.03 to 1 microns, most preferably 0.03 to 0.5 microns.

26. A composition according to any one of the preceding claims, wherein the weight ratio of shell wall material to encapsulated material is in the range 1:10 to 3:2 and preferably in the range 1:10 to 1:2.

27. A composition according to any one of the preceding claims, wherein the weight ratio of solvent/surfactant: capsules in the composition is in the range 100:1 to 5:1.

28. Capsules comprising encapsulated material, the material being encapsulated within shell capsules, each capsule comprising an encapsulating wall having an inner surface and an outer surface, with a coating on the inner surface and/or outer surface of the shell wall.

29. Capsules according to claim 28, wherein the encapsulated material comprises a first material which is at least partially, preferably substantially and more preferably completely soluble, in surfactant solution and/or solvent.

30. Capsules according to claim 29, wherein the first material is a perfume.

31. Capsules according to claim 29, wherein the first material is a dental flavour.

32. Capsules according to claim 29, wherein the first material is an agrichemical.

33. Capsules according to claim 29, wherein the first material is a cosmetic ingredient.
34. Capsules according to claim 29, wherein the first material is an insect repellent.
35. Capsules according to claim 29, wherein the first material is an antimicrobial agent or a deodorant active.
36. Capsules according to claim 30, wherein the perfume is in the form of a perfume composition, which comprises at least 80% and preferably at least 90% by weight of the total weight of the perfume composition of perfume materials having an octanol-water partition coefficient of greater than 2.5 (in logarithmic form to base 10).
37. Capsules according to claim 36, wherein less than 35%, and preferably less than 20%, by weight of the total weight of the perfume composition comprises perfume materials having an octanol-water partition coefficient of greater than 5 (in logarithmic form to base 10).
38. Capsules according to any one of claims 28 to 37, wherein the shell capsules are prepared by coacervation, interfacial polymerisation or polycondensation.
39. Capsules according to claim 38, wherein the shell capsules are aminoplast capsules.
40. Capsules according to claim 39, wherein the shell capsules are aminoplast capsules, based on melamine, singly or in combination with other suitable amines, crosslinking agents and secondary polymers.
41. Capsules according to claim 39, wherein the aminoplast capsules comprise a mixed resin of urea/formaldehyde, maleic anhydride copolymer(s) and melamine/formaldehyde polymers.

42. Capsules according to any one of claims 28 to 41, wherein the shell capsules have a diameter in the range 1 to 500 microns, preferably 1 to 300 microns, more preferably 1 to 50 microns, most preferably 1 to 10 microns.
43. Capsules according to any one of claims 28 to 42, wherein the inner surface of the shell wall is coated with a film-forming polymer.
44. Capsules according to claim 43, wherein the polymer is selected from: poly(ethylene-maleic anhydride), polyamine, waxes e.g. carbowax, polyvinylpyrrolidone (PVP) and its co-polymers such as polyvinylpyrrolidone-ethyl acrylate (PVP-EA), polyvinylpyrrolidone-vinyl acrylate, polyvinylpyrrolidone methylacrylate (PVP-MA), polyvinylpyrrolidone/vinyl acetate, polyvinyl acetal, polyvinyl butyral, polysiloxane, poly(propylene/maleic anhydride), maleic anhydride derivatives and co-polymers of the above, e.g. polyvinyl methyl ether/maleic anhydride.
45. Capsules according to claim 44, wherein the polymer is selected from: polyvinylpyrrolidone (PVP) and its co-polymers such as polyvinylpyrrolidone-ethyl acrylate (PVP-EA), polyvinylpyrrolidone-vinyl acrylate, polyvinylpyrrolidone methylacrylate (PVP-MA) and polyvinylpyrrolidone/vinyl acetate.
46. Capsules according to any one of the claims 28 to 45, wherein the outer surface of the shell wall is coated with a high molecular weight, film-forming polymer, which may optionally be crosslinked.
47. Capsules according to claim 46, wherein the polymer is water-soluble.
48. Capsules according to claim 46 or 47, wherein the polymer is selected from: polyvinyl alcohol, styrene-butadiene latex, gelatin, gum arabic, carboxymethyl cellulose, carboxymethyl hydroxyethyl cellulose, hydroxyethyl cellulose, other modified celluloses, sodium alginate, chitosan, casein, pectin, modified starch, polyvinyl acetal, polyvinyl butyral, polyvinyl methyl ether/maleic anhydride, polyvinyl pyrrolidone (PVP) and its co-

polymers (e.g. polyvinylpyrrolidone/vinyl acetate (PVP/VA) poly(vinyl pyrrolidone/dimethylaminoethyl methacrylate) (PVP/DMAEMA), poly(vinyl pyrrolidone/methacrylamidopropyl trimethyl ammonium chloride), melamine-formaldehyde and urea-formaldehyde.

49. Capsules according to claim 48, wherein the polymer is selected from: polyvinyl alcohol, polyvinyl pyrrolidone (PVP) and its co-polymers (e.g. polyvinylpyrrolidone/vinyl acetate (PVP/VA) poly(vinyl pyrrolidone/dimethylaminoethyl methacrylate) (PVP/DMAEMA), poly(vinyl pyrrolidone/methacrylamidopropyl trimethyl ammonium chloride).

50. Capsules according to any one of claims 28 to 49, wherein the coated shell capsules have a wall thickness in the range 0.01 to 30 microns, preferably 0.01 to 5 microns, more preferably 0.03 to 1 microns, most preferably 0.03 to 0.5 microns.

51. Capsules according to any one of claims 28 to 50, wherein the weight ratio of shell wall material to encapsulated material is in the range 1:10 to 3:2 and preferably in the range 1:10 to 1:2.

52. Capsules comprising encapsulated perfume, the perfume being encapsulated within an aminoplast capsule which comprises a coating of polyvinyl alcohol, polyvinyl pyrrolidone or a co-polymer of polyvinyl pyrrolidone on the outer surface of the shell, and/or a coating of a film-forming polymer on the inner surface.

53. Capsules according to claim 52, wherein the capsule includes a coating on the outer surface of the shell comprising polyvinyl alcohol and/or poly(vinyl pyrrolidone/dimethylaminoethyl methacrylate).

54. Capsules according to claim 52 or 53, wherein the capsules have a diameter in the range 1 to 50 microns, preferably 1 to 10 microns.

55. Capsules according to claim 52, 53 or 54, wherein the perfume is in the form of a perfume composition, which comprises at least 80% and preferably at least 90% by weight of the total weight of the perfume composition of perfume materials having an octanol-water partition coefficient of greater than 2.5 (in logarithmic form to base 10).

56. Capsules according to claim 55, wherein less than 35%, and preferably less than 20%, by weight of the total weight of the perfume composition comprises perfume materials having an octanol-water partition coefficient of greater than 5 (in logarithmic form to base 10).

57. Capsules according to any one of claims 52 to 56, wherein the capsule includes a coating on the inner surface of the shell comprising one or more polymers selected from: poly(ethylene-maleic anhydride), polyamine, waxes e.g. carbowax, polyvinylpyrrolidone (PVP) and its co-polymers such as polyvinylpyrrolidone-ethyl acrylate (PVP-EA), polyvinylpyrrolidone-vinyl acrylate, polyvinylpyrrolidone methylacrylate (PVP-MA), polyvinylpyrrolidone/vinyl acetate, polyvinyl acetal, polyvinyl butyral, polysiloxane, propylene maleic anhydride, maleic anhydride derivatives and co-polymers of the above, e.g. polyvinyl methyl ether/maleic anhydride.